

**CONTARINIA BURSARIAE, A NEW SPECIES OF CECIDOMYIIDAE (DIPTERA)
INFESTING FRUITS OF SWEET BURSARIA, *BURSARIA SPINOSA*
(PITTIOSPORACEAE) IN AUSTRALIA.**

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Summary

KOLESIK, P. (1995) *Contarinia bursariae*, a new species of Cecidomyiidae (Diptera) infesting fruits of sweet bursaria, *Bursaria spinosa* (Pittosporaceae) in Australia. *Trans. R. Soc. S. Aust.* 119(4), 177-181. 30 November, 1995.

A new gall midge species, *Contarinia bursariae*, (Diptera: Cecidomyiidae) is described and illustrated. Larvae found inside fruits of *Bursaria spinosa* Cav. (Pittosporaceae) prevent formation of the seeds. Detailed descriptions of the larva, pupa, male and female and the infestation symptoms are given.

KEY WORDS: Cecidomyiidae, *Contarinia bursariae* sp. nov., *Bursaria spinosa*, South Australia.

Introduction

Bursaria spinosa Cav., sweet bursaria or Christmas bush, is a shrub usually 1-3 m tall. The genus is endemic to Australia. *Bursaria spinosa* can be found in South Australia, Queensland, New South Wales, Victoria and Tasmania where it is common in woodland vegetation (Bennett 1986). Voluminous clusters of white flowers make the shrub a useful honey plant (Cunningham *et al.* 1981). The gall midge species described here was found to prevent seed production in *B. spinosa* in Morialta Conservation Park, near Adelaide.

Materials and Methods

Fruit capsules of *Bursaria spinosa* were surveyed in Morialta Conservation Park (13 km north-east of Adelaide) on 19 February 1995. Those which contained larvae of the new species were brought to the laboratory where the fruits were cut open and the extracted larvae processed in two ways. A small number was preserved in 70% ethanol after their colour had been noted. The remainder were transferred with entomological forceps into pots containing sterilised, wet sand and reared to the adult stage. Pots were examined daily and emerged adults preserved together with their pupal skins in 70% ethanol after their colour had been noted. For microscopic examination adults, larvae and pupae were mounted on slides in Canada balsam according to the technique outlined by Kolesik (1995). The type series and other material retained in 70% ethanol are deposited in the South Australian Museum, Adelaide [SAM] and Australian National Insect Collection, CSIRO, Canberra [ANIC].

***Contarinia bursariae* sp. nov.
(FIGS 1-13)**

Holotype: ♂, Morialta Conservation Park, South Australia [34°54' S, 138°44' E], 2.iii.1995, P. Kolesik, reared from larva from fruit of *Bursaria spinosa* Cav., sampled 19.ii.1995, I21274 [SAM].

Allotype: ♀, same data, I21293 [SAM].

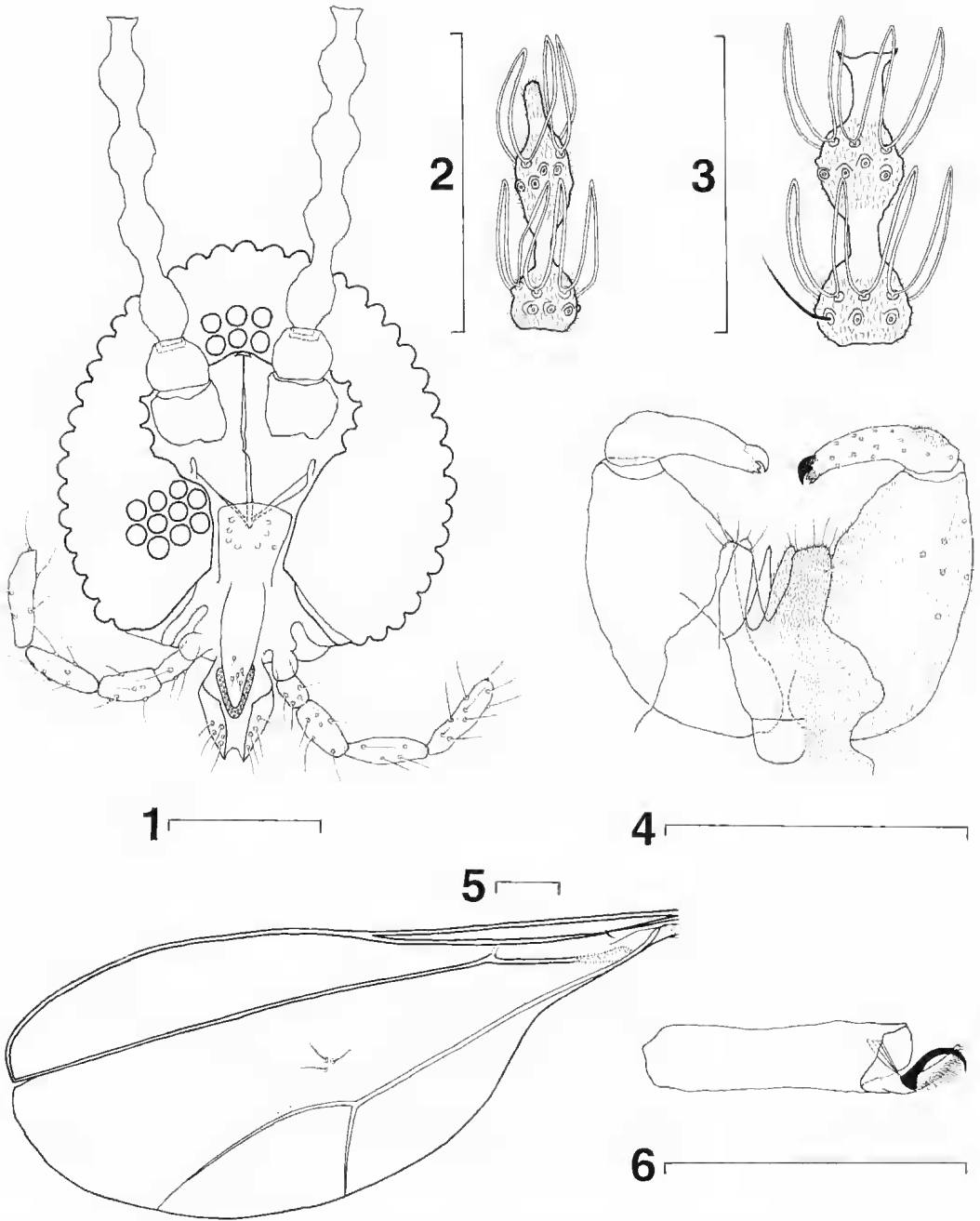
Paratypes: 2♂♂, 2♀♀, 1 pupal skin [SAM], 2♂♂, 2♀♀, 1 pupal skin [ANIC], all same data but emerged 2.iii.1995 - 6.iii.1995, 4 larvae [SAM], 2 larvae [ANIC], sampled with holotype.

Other material: 21 larvae, sampled with holotype [SAM].

Male (Figs 1-6)

Colour: antenna grey, head black, thorax brown, abdomen with sclerotized parts brown and non-sclerotized parts yellow, legs grey with black scale strips along segments. Wing length 1.26 mm (1.19 - 1.31), width 0.47 mm (0.44 - 0.51). Vein C broken at juncture with R_5 . M_1 in form of stripe of setae, R_5 sclerotized on base only. Wing membrane covered with setae, 17 - 22 μ m long. Abdominal tergites 2 - 6 with caudal setae only. Head with postvertical peak present. Eye facets rounded, eye bridge 8 - 10 facets long medially. Eight fronto-clypeal setae in all specimens. Antenna total length 1.43 mm (1.32 - 1.54). Length measurements of third flagellomere (μ m): proximal node 30 (28 - 32), proximal neck 17 (14 - 18), distal node 36 (34 - 38), distal neck 28 (24 - 31). Circumfilar loops reaching the mid-length of the next node. Tarsal claws curved at mid-length, about as long as empodium. Genitalia: gonocoxite setose and setulose; gonostylus with strongly sclerotized claw and an array of plates below it, sparsely setose with densely setulose pouch at base; hypoproct deeply divided medially, with one seta on each lobe, setulose; cerci deeply divided medially, setose and setulose; aedeagus as long as hypoproct and cerci.

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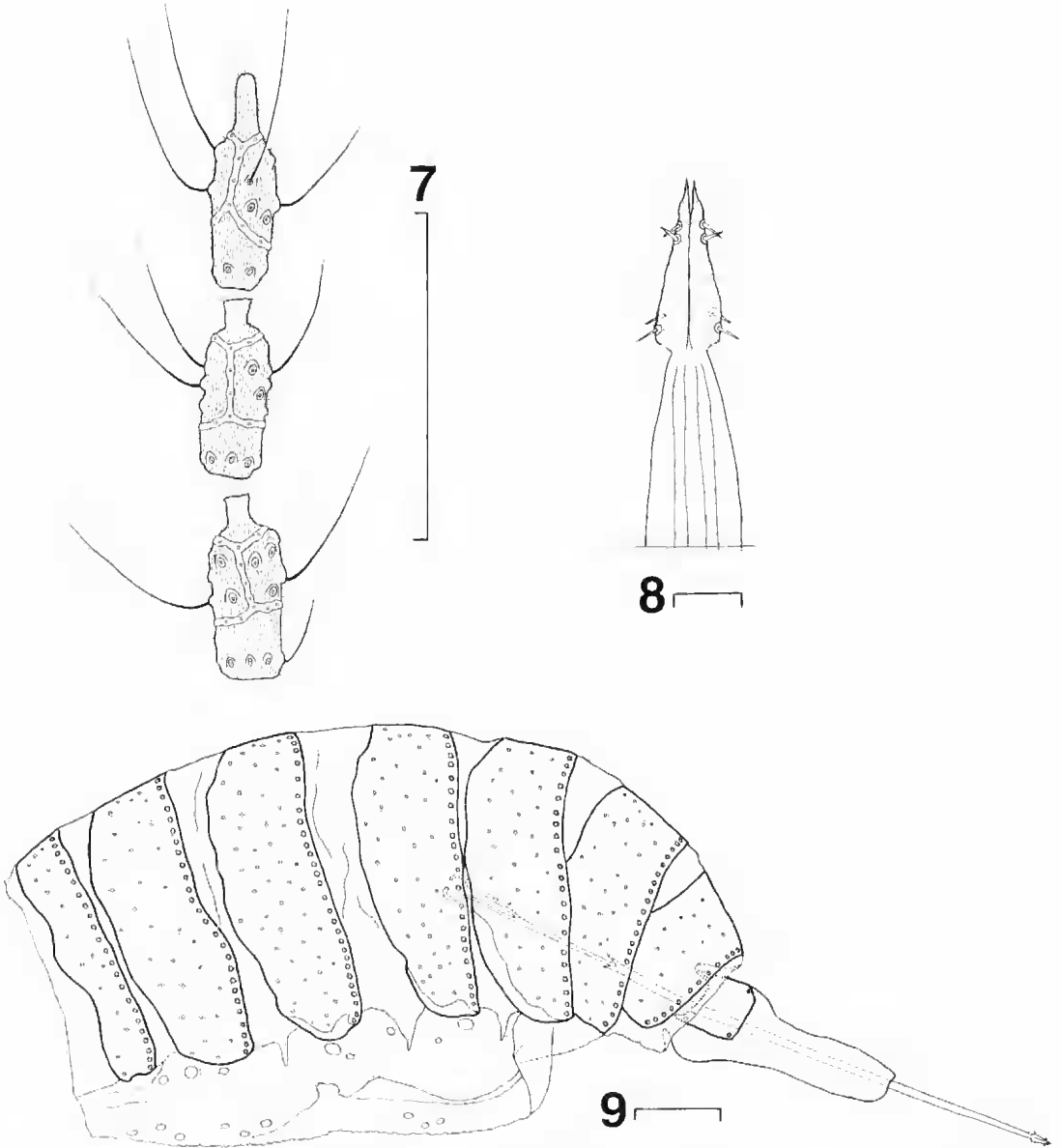
Figs 1-6. Male of *Contarinia bursariae* sp. nov. 1. Head of frontal view. 2. Last flagellomere. 3. Fourth flagellomere. 4. Genitalia in dorsal view. 5. Wing. 6. Last tarsomere with claw and empodium. Scale bars = 100 μ m.

Female (Figs 7-9)

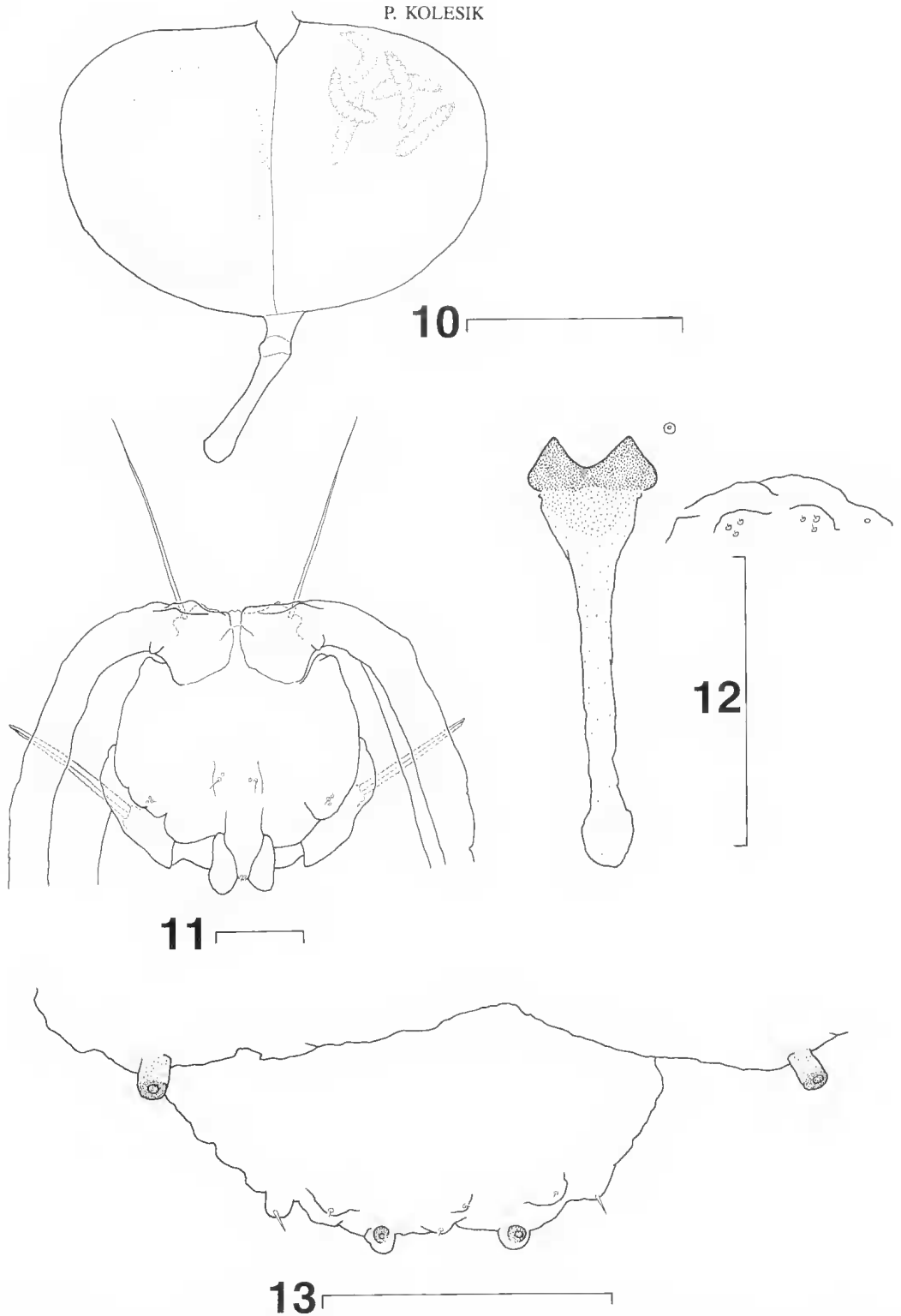
Wing length 1.28 mm (1.23 - 1.37), width 0.48 mm (0.43 - 0.53). Antenna total length 0.79 mm (0.69 - 0.83). Third flagellomere with node $45\ \mu\text{m}$ (43 - 49) and neck $6\ \mu\text{m}$ (5 - 8) long. Circumfila appressed, consisting of two transverse rings connected by two longitudinal bands. Other characters as in male.

Mature larva (Figs 12-13)

Colour yellow. Total length 2.44 mm (2.20 - 2.75), diameter 0.18 mm (0.14 - 0.21). Integument smooth. ventrally with several transverse rows of spiculae on anterior half of each segment as well as with longitudinal rows around anus. All ventral, pleural, lateral and dorsal papillae with minute setae, sternal



Figs 7-9. Female of *Contarinia bursariae* sp. nov. 7. Last three flagellomeres. 8. End of ovipositor in dorsal view. 9. Abdomen in lateral view. Scale bars = $100\ \mu\text{m}$ in 7 & 9; $10\ \mu\text{m}$ in 8.



Figs 10-13. *Contarinia bursariae* sp. nov. 10. Larvae inside fruit capsule of *Bursaria spinosa* Cav. (left locus with fruit, right one infested). 11. Anterior part of pupa in dorsal view. 12. Sternal spatula of larva. 13. Terminal segment of larva in dorsal view. Scale bars = 5 mm in 10; 100 μ m in 11-13.

papillae aetose. Terminal segment with one pair of stublike, aetose papillae and three pairs of setose papillae, with one of the three pairs having longer setae than the other two. Head capsule width $51 \mu\text{m}$ (43-54), length $40 \mu\text{m}$ (37-45), length of posterolateral apodemes $42 \mu\text{m}$ (35-46). Sternal spatula $152 \mu\text{m}$ (139-175) in length, with apical enlargement $44 \mu\text{m}$ (41-47) in width and $20 \mu\text{m}$ (19-21) in length. Larva can jump short distances by arching its body and inserting its posterior end between the spatula enlargement and the integument and by subsequent quick releasing of the posterior end.

Pupa (Fig. 11)

Head with small, angular, slightly sclerotized antennal horns. Cephalic papillae with seta $223 - 250 \mu\text{m}$ long. Two pairs of lower facial papillae, one of each pair setose (11 - $23 \mu\text{m}$) and one aetose. Two triplets of lateral facial papillae, one of each triplet setose (about $5 \mu\text{m}$) and two aetose. Prothoracic spiracle with trachea ending at its apex, 133 to $168 \mu\text{m}$ long. Second to eighth abdominal segments with strongly sclerotized, simple dorsal spines, 5 - 15 in number and 4 - $25 \mu\text{m}$ in length.

Infestation symptoms (Fig. 10)

The infestation of *Bursaria spinosa* by *Contarinia bursariae* can easily be overlooked because there is no apparent malformation of the fruit capsules. However, in transmitted sunlight several larvae can be recognised inside the capsule. The larvae occupy one or both locules of the capsule, preventing the development of seeds. Up to eight larvae were observed within individual fruits. Despite the absence of seed in infested fruit no significant decrease in the total seed production per plant was observed due to the low infestation incidence in comparison to the enormous number of fruit per plant.

Etymology

Derived from the generic name of the host plant.

Remarks

The genus *Contarinia* is one of the largest genera of Cecidomyiidae represented in all zoogeographical

regions. Larvae of all known species are phytophagous, most live gregariously in flowers, buds and fruits which are often malformed to galls. Others are found in malformed leaves and stems. Almost all known species are host-specific, sometimes with different species living on the same plant. The genus *Contarinia* in the context of this paper is defined as below. Larva: terminal segment with 6 setose papillae and 2 large, stublike, aetose papillae. Adults: maxillary palpus with 4 segments, antenna with 12 flagellomeres; wings with R_5 joining C beyond wing apex; tarsal claws simple on all legs. Male: flagellomeres binodal, with a single series of circumfilar loops on each node; genitalia with stout, unlobed gonocoxite, slightly tapered gonostylus, bilobed hypoproct and simple, short, distally tapering aedeagus. Female: ovipositor very long, retractable, the cerci tiny, dorso-ventrally flattened, and closely approximated mesally.

The genus *Contarinia* is known in Australia from 12 species, all of them from inflorescences and seed heads of Graminae and Cyperaceae (Harris 1979). The species described here differs morphologically from the previously-described Australian species in the number of setae on female cerci and the relative length of male circumfilar loops: female cerci bear eight setae in *C. bursariae*; those in all the other species bear more than 14; male circumfilar loops reach the mid-length of the next node in *C. bursariae*; those in the other species never extend beyond the base of the next node.

Acknowledgments

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